

Welcome to the 2021 Online HYSPLIT Workshop (DAY 3 of 4)

The broadcast is scheduled to start at:
09:00 Eastern Daylight Time (EDT) = 13:00 UTC

NOAA Air Resources Laboratory
June 15-18, 2021

Day 3, Introduction (9:00 – 9:15)

Dr. Mark Cohen, Lead Scientist, HYSPLIT Modeling Group

- ☐ **Agenda for today**
- ☐ **Quick recap of logistics**
- ☐ **A few comments on transformation and deposition**
- ☐ **HYSPLIT resources**
- ☐ **... And then, on to the course!**

Workshop guidance and resources posted at

[Workshop Web Page](#)

**`https://www.ready.noaa.gov/
register/HYSPLIT_hyagenda.php`**

... this Intro presentation available as a
Handout in Go-to-Webinar , and will
also be put on Workshop Web Page

Agenda – Day 1

UTC	EDT	Agenda Item
13:00 – 13:15	09:00 – 09:15	Welcome, Introduction and Logistics
13:15 – 14:00	09:15 – 10:00	1. Installing HYSPLIT
14:00 – 14:10	10:00 – 10:10	Break
14:10 – 14:50	10:10 – 10:50	2. Testing the installation
14:50 – 15:00	10:50 – 11:00	Break
15:00 – 15:45	11:00 – 11:45	3. Gridded meteorological data sets
15:45 – 16:30	11:45 – 12:30	Break
16:30 – 18:00	12:30 – 14:00	4. Trajectory calculations
18:00 – 18:15	14:00 – 14:15	Break
18:15 – 19:30	14:15 – 15:30	5. Trajectory options
19:30 – 19:40	15:30 – 15:40	Break
19:40 – 20:45	15:40 – 16:45	6. Trajectory statistics
20:45 – 21:00	16:45 – 17:00	First day wrap-up

Agenda – Day 2

UTC	EDT	Agenda Item
13:00 – 13:15	09:00 – 09:15	Comments / questions from previous day
13:15 – 14:45	09:15 – 10:45	7. Air Concentration Calculations
14:45 – 15:00	10:45 – 11:00	Break
15:00 – 16:30	11:00 – 12:30	8. Configuring the CAPTEX simulation
16:30 – 17:30	12:30 – 13:30	Break
17:30 – 19:00	13:30 – 15:00	9. Air Concentration Parameter Sensitivity
19:00 – 19:15	15:00 – 15:15	Break
19:15 – 20:00	15:15 – 16:00	10. Alternate Display Options
20:00 – 20:45	16:00 – 16:45	11. Pollutant Transformations and deposition (started this section)
20:45 – 21:00	16:45 – 17:00	Second day wrap-up / questions

Agenda – Day 3

UTC	EDT	Agenda Item
13:00 – 13:15	09:00 – 09:15	Comments / questions from previous day
13:15 – 14:15	09:15 – 10:15	11. Pollutant Transformations and deposition <i>(continuing this section from yesterday)</i>
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 16:00	10:30 – 12:00	12. Air Concentration Uncertainty
16:00 – 17:00	12:00 – 13:00	Break
17:00 – 18:00	13:00 – 14:00	13. Source Attribution Methods (...first part)
18:00 – 18:15	14:00 – 14:15	Break
18:15 – 19:15	14:15 – 15:15	13. Source Attribution Methods (...continued)
19:15 – 19:30	15:15 – 15:30	Break
19:30 – 20:45	15:30 – 16:45	14. Wildfire Smoke and Dust Storms
20:45 – 21:00	16:45 – 17:00	Third day wrap-up / questions

Note: all times are approximate

Agenda – Day 4

UTC	EDT	Agenda Item
13:00 – 13:15	09:00 – 09:15	Comments / questions from previous day
13:15 – 14:45	09:15 – 10:45	15. Radioactive Pollutants and Dose
14:45 – 15:00	10:45 – 11:00	Break
15:00 – 16:30	11:00 – 12:30	16. Volcanic Eruptions with Gravitational Settling
16:30 – 17:30	12:30 – 13:30	Break
17:30 – 18:30	13:30 – 14:30	17. Custom Simulations
18:30 – 18:45	14:30 – 14:45	Break
18:45 – 19:45	14:45 – 15:45	Questions and answer (Q & A) session with course instructor Roland Draxler
19:45 – 20:00	15:45 – 16:00	Final course wrap-up

Quick Recap of Logistics

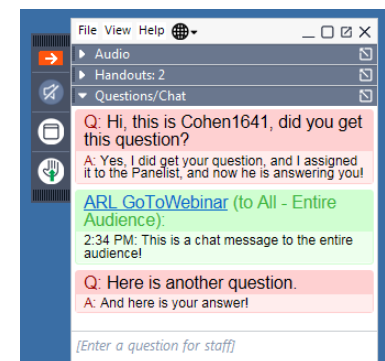
Quick Recap of Logistics

- **General questions:**
 - use Go-to-Webinar Question box and we will do our best to answer
 - We are not using the “raise hand” feature for questions
- **Detailed questions, e.g., about the model:**
 - use the HYSPLIT Forum
 - if haven’t already, “register” in upper right corner of Forum web page
- **Event Guides:**
 - Online Event Guide and Recorded Event Guide available as Handouts in Go-to-Webinar and on the Workshop Web Page
- **Handouts:**
 - Other documents – e.g., this presentation – provided as Handouts in Go-to-Webinar and also on the Workshop Web Page
- **Recordings:**
 - Each day’s recording will be posted to the Workshop Web Page as soon as it is ready, generally 2-4 hours after the day’s session ends.


Asking Questions

- Ask general questions about the Webinar or Go-to-Webinar in the Control Panel that was just discussed

*...if viewing a recording, can ask
general questions by emailing
arl.webmaster@noaa.gov*



- Ask questions about HYSPLIT and the Tutorial in the HYSPLIT Forum







HYSPLIT Forum: hysplitbbs.arl.noaa.gov
A Forum for HYSPLIT Dispersion Model Users to Communicate Questions, Problems, and Ideas for Upgrades, etc.

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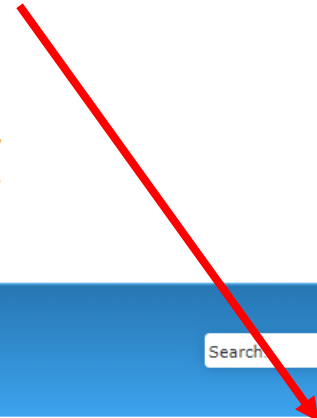
[Board index](#) < [HYSPLIT Workshop](#) < [2021 HYSPLIT Workshop Questions](#)

2021 HYSPLIT Workshop Questions

FORUM	TOPICS	POSTS	LAST POST
 1. Installing HYSPLIT	1	1	Installing HYSPLIT using the ... by sonny.zinn  June 8th, 2021, 1:46 pm
 2. Testing the installation	1	4	Re: GSView requesting for ver... by sonny.zinn  June 8th, 2021, 6:24 am

Asking Questions

If you have not already registered
for the HYSPLIT Forum, you can
do so easily by clicking on the
“Register” icon at
<https://hysplitbbs.arl.noaa.gov/>

A screenshot of the top section of the HYSPLIT Forum website. It features a blue header bar with the phpBB logo on the left, the forum name and URL in the center, and a search bar on the right. Below the header is a light blue navigation bar containing links for "Quick links", "FAQ", "Board index", "Register", and "Login". The "Register" button is highlighted with a red square.

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HYSPLIT Forum: hysplitbbs.arl.noaa.gov
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Search

Quick links

It is currently June 7th, 2020, 7:32 pm

Asking Questions



HYSPLIT Forum: hysplitbbs.arl.noaa.gov
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[Board index](#)

[Notifications](#) **11** [MarkCohen](#)




It is currently June 18th, 2020, 6:36 pm

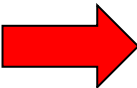
Last visit was: June 16th, 2020, 10:13 am


[Mark forums read](#)

HYSPLIT	TOPICS	POSTS	LAST POST
 Users General questions and postings pertaining to the use of HYSPLIT regardless of the platform. For platform specific questions, use the HYSPLIT Platform forums.	190	715	Re: Meteorological Data by barbara.stunder May 26th, 2020, 8:52 am
 Developers Questions and postings pertaining to the development of HYSPLIT, feature enhancements, and HYSPLIT internals. HYSPLIT source code and algorithms are discussed here.	19	70	Trying to Recreate This image by munleyj May 11th, 2020, 9:48 am
 Bugs Post any defects you find in the HYSPLIT software here. The HYSPLIT Developers carefully monitor this list and will work diligently to repair any reported problems. When posting a bug report, please specify both the HYSPLIT version and operating system you are using.	42	145	Re: question about DATEM form... by lida May 18th, 2020, 9:37 pm
 Announce Announcements pertaining to HYSPLIT, training materials, dispersion related jobs or research positions, or related software. This list is moderated and will not be used for any discussion.	25	47	Re: TAPPAS by alicecc January 27th, 2020, 12:26 pm

⋮

 in the atmosphere. This section is also to facilitate collaborations between researchers involved in chemical transport and dispersion.			January 22nd, 2020, 3:55 am
 Radiological Post questions, comments and links to research (research papers, web sites, etc) involving HYSPLIT and radiological nuclides. This section is also to facilitate collaborations between researchers involved in radiological nuclide transport and dispersion.	12	38	Re: Fukushima Calculation by ariel.stein September 20th, 2018, 9:25 am
 Cluster Analysis Topics about the trajectory clustering program for HYSPLIT.	31	133	Re: Generate cluster trajecto... by barbara.stunder August 26th, 2019, 7:35 am



FORUM	TOPICS	POSTS	LAST POST
 HYSPLIT Workshop	17	34	? Re: Moderator test by alicecc June 12th, 2020, 11:30 am

Asking Questions



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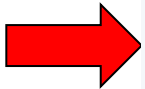
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HYSPLIT Workshop

FORUM	TOPICS	POSTS	LAST POST
 2021 HYSPLIT Workshop Questions	2	5	Installing HYSPLIT using the ... by sonny.zinn June 8th, 2021, 1:46 pm
 2020 HYSPLIT Workshop Questions Questions from the 2020 Online HYSPLIT Workshop.	88	349	Re: ImageMagick version - up ... by nobella April 14th, 2021, 12:22 am
 2019 HYSPLIT Workshop Questions During the four weeks of the 2019 HYSPLIT Workshop, users will be able to post questions on the week's topics to this Forum and model developers will try to answer them as soon as possible.	3	5	Re: Depositions calculated wi... by ariel.stein June 17th, 2019, 3:58 pm



<https://hysplitbbs.arl.noaa.gov/viewforum.php?f=57>

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






















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2021 HYSPLIT Workshop Questions

FORUM	TOPICS	POSTS	LAST POST
 1. Installing HYSPLIT	5	13	Re: GUI stopped working by cgagnon3  June 15th, 2021, 10:50 am
 2. Testing the installation	4	29	Re: Mac OS Catalina: enable H... by aring  June 15th, 2021, 12:21 pm
 3. Gridded meteorological data files	3	17	Re: FTP failed by christopher.loughner  June 16th, 2021, 4:08 pm
 4. Trajectory calculations	3	7	Re: Multiple Trajectories in ... by almanzav  June 16th, 2021, 4:05 pm
 5. Trajectory options	4	22	Re: Map Background by almanzav  June 16th, 2021, 4:03 pm
 6. Trajectory statistics	4	17	Re: The cluster Analysis does... by perihankurt  June 16th, 2021, 3:02 pm
 7. Air concentration calculations	2	5	Re: Unable to animate GIF by Fantine  June 16th, 2021, 10:50 am
 8. Configuring the CAPTEX simulation	3	13	Re: #8.1 - check for release ... by aleya  June 16th, 2021, 4:54 pm
 9. Air concentration parameter sensitivity	1	2	Re: #9.2 Step 5 by christopher.loughner  June 16th, 2021, 2:19 pm
 10. Alternate display options	2	5	Re: Limits of ESRI GIS export by christopher.loughner  June 16th, 2021, 5:23 pm
 11. Pollutant transformations and deposition	1	3	Re: CHEMRATE.TXT interpretati... by stefan  June 16th, 2021, 4:45 pm



You can post your question in the appropriate section, based on where in the Tutorial your question refers to.



Asking Questions



You can look to see if there already is a similar question, and if not, you can create a **New Topic**



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6. Trajectory statistics

[New Topic](#)

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TOPICS	REPLIES	VIEWS	LAST POST
 The cluster Analysis does not work and does not create INFILE by perihankurt » June 16th, 2021, 6:29 am	2	35	by perihankurt June 16th, 2021, 3:02 pm
 Clustering backwards trajectories by mhoecker » June 16th, 2021, 9:19 am	1	25	by hyun.kim June 16th, 2021, 9:43 am
 Unable to generate Control Files for Grolocation in GUI by l_gillespie » June 15th, 2021, 4:30 pm	7	80	by l_gillespie June 15th, 2021, 5:10 pm
 Unable to Cleanup Working Directory? by RickV » June 15th, 2021, 4:26 pm	3	37	by RickV June 15th, 2021, 4:46 pm

[New Topic](#)


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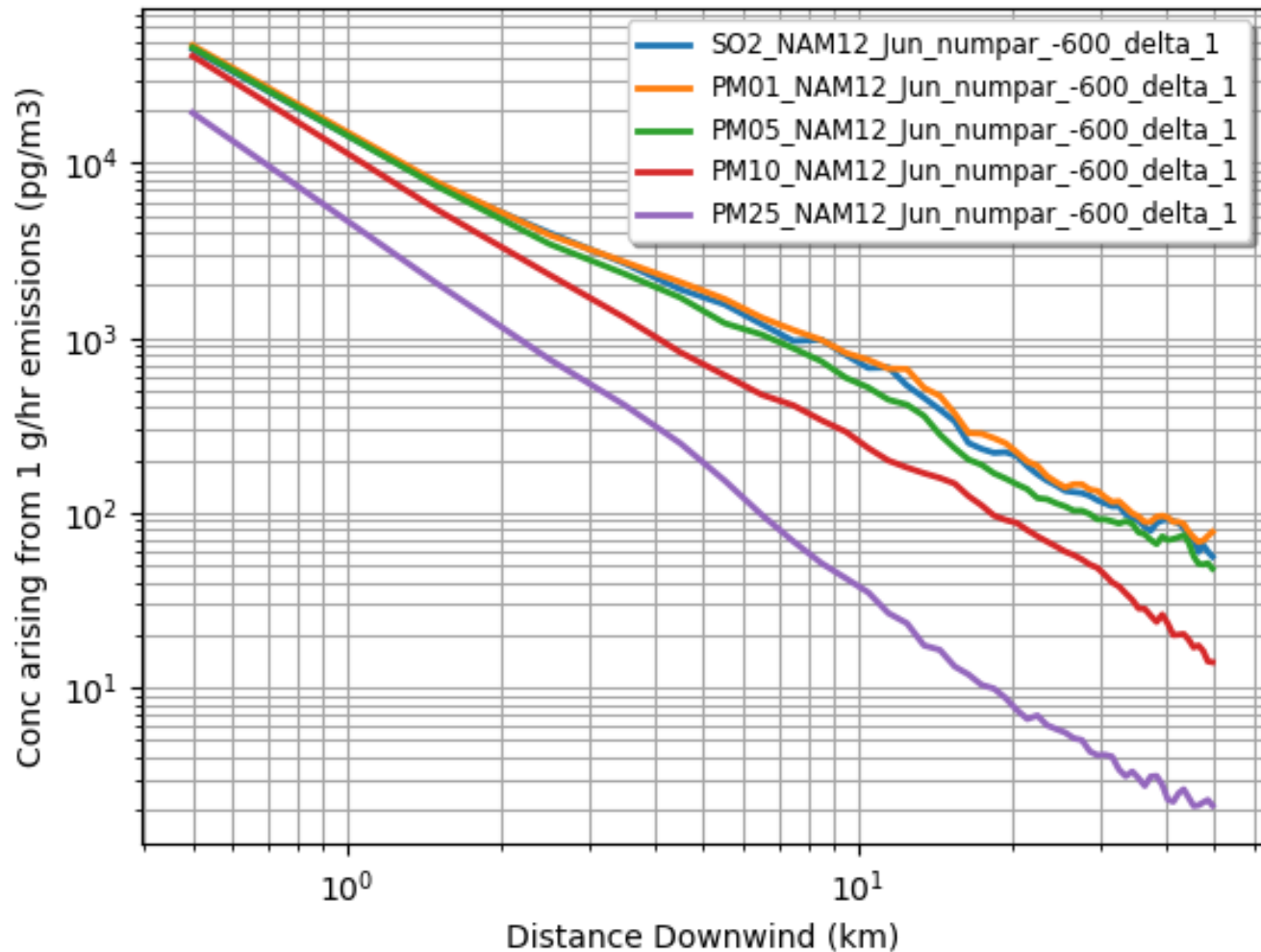
A few introductory comments on transformation and deposition

- **Trajectories vs. Concentration (dispersion):**
 - Trajectories *do not* include transformation or deposition
- **Long-range vs. short-range transport:**
 - Transformation and deposition more important for long-range transport than for shorter-range transport, as processes have longer to work
 - For short-range transport, e.g., the first ~50 km, these processes typically do not have a dramatic effect on airborne concentrations.
- **Emergency Response:**
 - For emergency response applications, generally dealing with short-range transport and airborne exposure, ignoring transformation and deposition can be a reasonable approach; get a conservative, over-estimate of concentrations; simulation effects likely to be small in short-range; see Report and Presentation in Handouts.
- **Ecosystem Impacts:**
 - Of course, for some applications, like ecosystem impacts, these processes – especially deposition -- are essential aspects to include!

Effect of Deposition on Short-Range Airborne Concentrations

Maximum Local Grid Conc as a Function of Distance

particle_size_NAM12_Jun



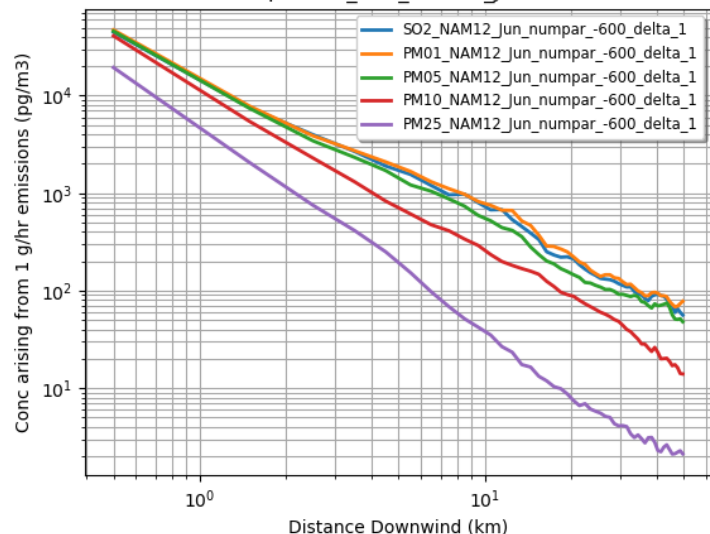
Not a very dramatic difference between gas-phase SO_2 , and 1 and 5 μm particles

If pollutant partitions to atmospheric particles, most would be associated with particles less than 5 μm

Bigger differences seen with 10 and 25 μm particles

Maximum Local Grid Conc as a Function of Distance

particle_size_NAM12_Jun



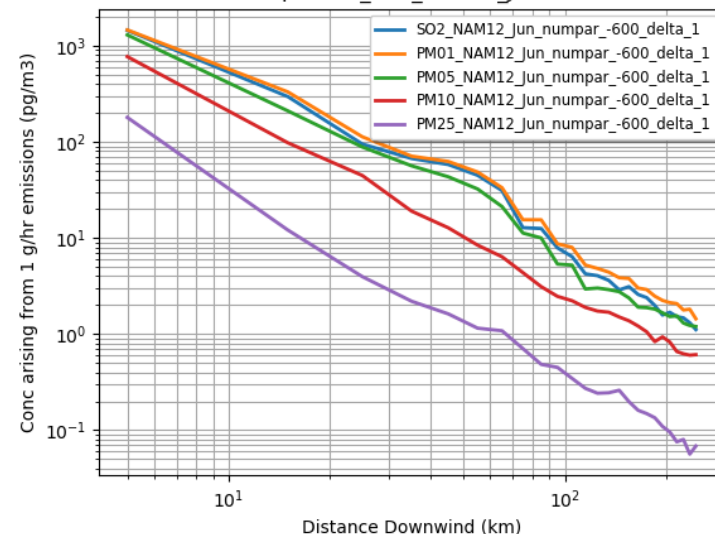
Not a very dramatic difference between gas-phase SO₂, and 1 and 5 μm particles

If pollutant partitions to atmospheric particles, most would be associated with particles less than 5 μm

Bigger differences seen with 10 and 25 μm particles

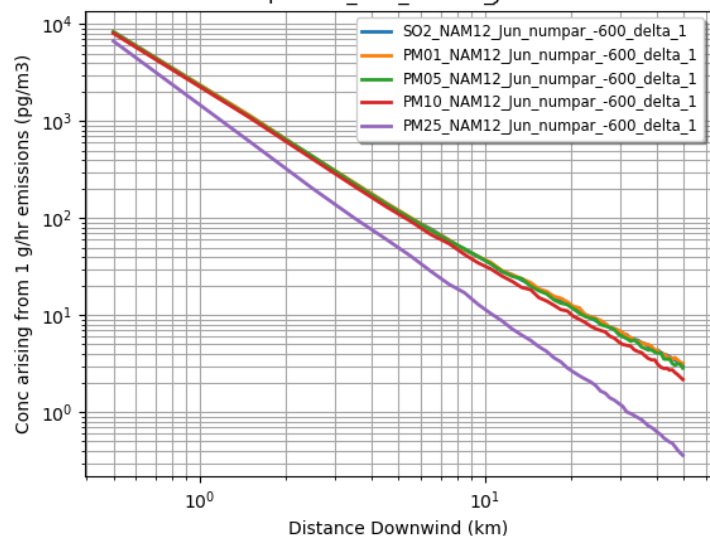
Maximum Regional Grid Conc as a Function of Distance

particle_size_NAM12_Jun



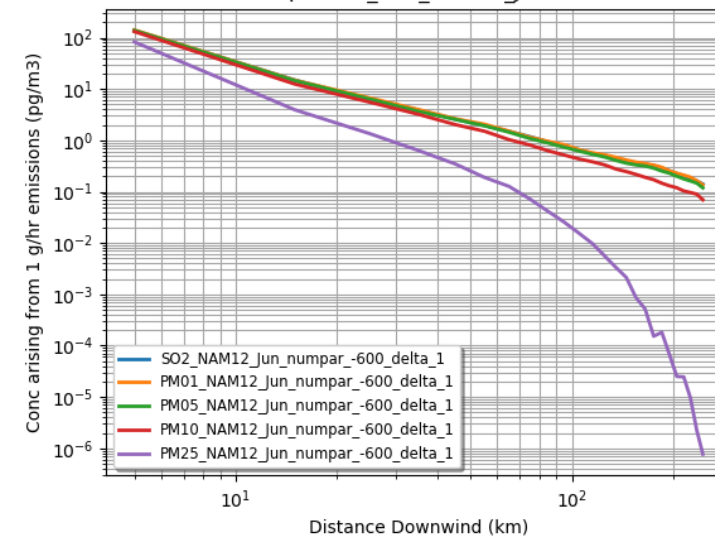
Median Local Grid Conc as a Function of Distance

particle_size_NAM12_Jun



Median Regional Grid Conc as a Function of Distance

particle_size_NAM12_Jun



HYSPLIT Documentation and Learning Resources

- [HYSPLIT Tutorial](#): detailed instructions on using the GUI + example scripts; can be run online or downloaded to local computer
- The GUI is a great way to learn HYSPLIT
 - even experienced users use it when trying something new
 - can create a run in the GUI, and then look at associated input/output files to tell you how to create a script to do similar simulations
 - you can do some relatively complicated procedures (e.g., trajectory clustering)
- HYSPLIT Users Guide: [online](#) (and also in hysplit/documents directory)
- Download HYSPLIT and other resources: <https://www.ready.noaa.gov/HYSPLIT.php>
- [HYSPLIT Cheat Sheet](#)
- Model Overview: <https://www.arl.noaa.gov/hysplit/hysplit/>
- Equations: https://www.arl.noaa.gov/wp_arl/wp-content/uploads/documents/reports/arl-224.pdf
- HYSPLIT Forum: <https://hysplitbbs.arl.noaa.gov/>
- HYSPLIT FAQ's: <https://www.arl.noaa.gov/hysplit/hysplit-frequently-asked-questions-faqs/>
- HYSPLIT Training Workshop: https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php
- Stein et al., 2015: NOAA's HYSPLIT atmospheric transport and dispersion modeling system, *Bull. Amer. Meteor. Soc.*, 96, 2059-2077, <http://dx.doi.org/10.1175/BAMS-D-14-00110.1>
- Rolph et al., 2017: Real-time Environmental Applications and Display sYstem: READY. *Environmental Modelling & Software*, 95, 210-228, <https://doi.org/10.1016/j.envsoft.2017.06.025>

Course Instructor

Roland Draxler

NOAA Air Resources
Laboratory (retired)

